

Brief Operating Instructions

Liquiline Compact CM72

Compact single-parameter transmitter for Memosens sensors



These instructions are Brief Operating Instructions; they are not a substitute for the Operating Instructions pertaining to the device.

Detailed information on the device can be found in the Operating Instructions and in the other documentation available at:





- www.endress.com/device-viewer
- Smart phone/tablet: Endress+Hauser Operations App

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
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1 About this document

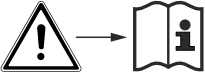
1.1 Warnings

Structure of information	Meaning
 <p>Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action</p>	<p>This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation will result in a fatal or serious injury.</p>
 <p>Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action</p>	<p>This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation can result in a fatal or serious injury.</p>
 <p>Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action</p>	<p>This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.</p>
 <p>Cause/situation If necessary, Consequences of non-compliance (if applicable) ▶ Action/note</p>	<p>This symbol alerts you to situations which may result in damage to property.</p>

1.2 Symbols

Symbol	Meaning
	Additional information, tips
	Permitted or recommended
	Not permitted or not recommended
	Reference to device documentation
	Reference to page
	Reference to graphic
	Result of a step

1.3 Symbols on the device

Symbol	Meaning
	Reference to device documentation

1.4 Documentation

The following instructions complement these Brief Operating Instructions and are available on the product pages on the Internet:

Operating Instructions Memosens, BA01245C

- Software description for Memosens inputs
- Calibration of Memosens sensors
- Sensor-specific diagnostics and troubleshooting

2 Basic safety instructions

2.1 Requirements for personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.



Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Intended use

The Liquiline CM72 is a transmitter for connecting digital sensors with Memosens technology, permanently preset to sensor parameters and measuring range spreading with 4...20mA communication.

The device is designed for use in the following industries:

- Life science
- Chemical industry
- Water and wastewater
- Food and beverages
- Power stations
- Other industrial applications

2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:

- Installation guidelines
- Local standards and regulations

Electromagnetic compatibility

- The product has been tested for electromagnetic compatibility in accordance with the applicable international standards for industrial applications.
- The electromagnetic compatibility indicated applies only to a product that has been connected in accordance with these Operating Instructions.

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.
4. Label damaged products as defective.

During operation:

- ▶ If faults cannot be rectified:
products must be taken out of service and protected against unintentional operation.

CAUTION

Cleaning not switched off during calibration or maintenance activities

Risk of injury due to medium or cleaning agent!

- ▶ If a cleaning system is connected, switch it off before removing a sensor from the medium.
- ▶ If you wish to check the cleaning function and have therefore not switched off the cleaning system, wear protective clothing, goggles and gloves or take other appropriate measures.

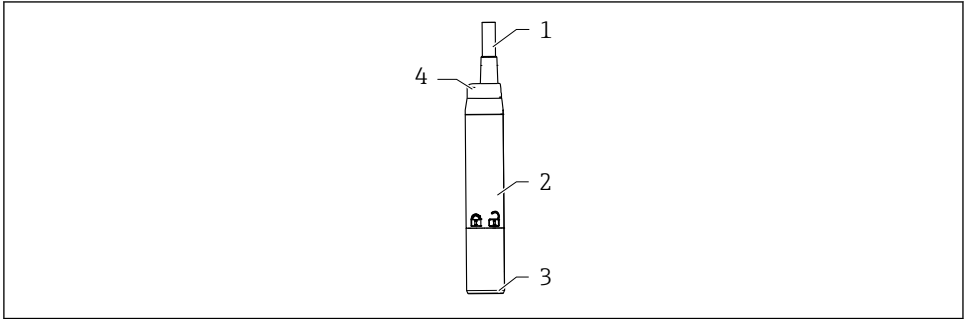
2.5 Product safety

2.5.1 State-of-the-art technology

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and international standards have been observed.

3 Product description

3.1 Product design



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1 Transmitter design

- 1 Cable
- 2 Housing
- 3 Memosens connection
- 4 LED, for optical signaling of operating statuses of measuring point

3.1.1 Measuring parameters

The transmitter is designed for digital Memosens sensors with inductive plug-in head:

- pH, ORP, pH/ORP combined sensors
- Conductive conductivity
- Dissolved oxygen

Depending on the order version, the measuring range is configured to suit the sensor type:

- pH sensor: 0 to 14 pH
- ORP: -1500 mV to +1500 mV
- Conductivity: 0 to 20 $\mu\text{S}/\text{cm}$
- Conductivity: 0 to 500 $\mu\text{S}/\text{cm}$
- Conductivity: 0 to 20 mS/cm
- Conductivity: 0 to 500 mS/cm
- Oxygen: 0 to 200 $\mu\text{g}/\text{l}$
- Oxygen: 0 to 20 mg/l

4 Incoming acceptance and product identification

4.1 Incoming acceptance

1. Verify that the packaging is undamaged.
 - ↳ Notify the supplier of any damage to the packaging.
Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged.
 - ↳ Notify the supplier of any damage to the delivery contents.
Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing.
 - ↳ Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
 - ↳ The original packaging offers the best protection.
Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

4.2 Product identification

4.2.1 Nameplate

The nameplate provides you with the following information on your device:

- Manufacturer identification
 - Order code
 - Extended order code
 - Serial number
 - Firmware version
 - Ambient and process conditions
 - Input and output values
 - Safety information and warnings
 - Approvals as per version ordered
- Compare the data on the nameplate with your order.

4.2.2 Product identification

Product page

www.endress.com/CM72

Manufacturer address

Endress+Hauser Conducta GmbH+Co. KG
Dieselstraße 24
D-70839 Gerlingen

Scope of delivery

The scope of delivery includes:

- CM72
- Brief Operating Instructions
- ▶ If you have any queries:
Please contact your supplier or local sales center.

5 Electrical connection

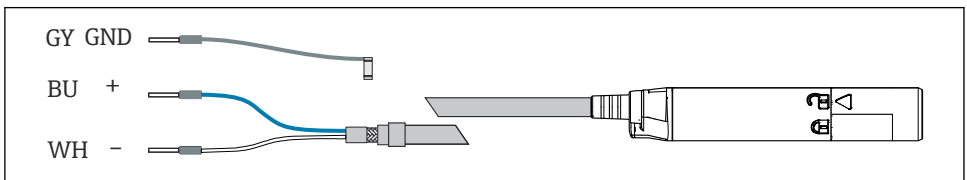
⚠ WARNING

Device is live!

Incorrect connection may result in injury or death!

- ▶ The electrical connection may be performed only by an electrical technician.
- ▶ The electrical technician must have read and understood these Operating Instructions and must follow the instructions contained therein.
- ▶ **Prior** to commencing connection work, ensure that no voltage is present on any cable.

Supply voltage:	12.6 to 30 VDC (when error current > 20 mA) 14 to 30 VDC (if the error current is set to 3.6 mA.)
Cable length:	3 m (10 ft) 7 m (23 ft) 15 m (46 ft)
Signal output:	4 to 20 mA
Signal on alarm:	3.6 or 23 mA depending on order version



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2 Electrical connection

- ▶ Connect ferrules as specified in the table:

Cable	Function
Gray (GY)	Grounding, GND
BU (blue)	4 to 20 mA +
White (WH)	4 to 20 mA -

The ground cable must be provided by the customer.

5.1 Environment

Degree of pollution of entire device:	Pollution level 4
Degree of internal pollution:	Pollution level 2
Installation category:	Installation category 1
Max. height:	2000 m (6561.68 ft)
Degree of protection:	NEMA Type 6 IP 67 IP 68
Ambient temperature range:	-20°C to 85°C (-4 to 185 °F)
Storage temperature:	-40 ... +85 °C (-40 ... 185 °F)
Relative humidity:	5 ... 95 %

6 System integration

6.1 Integrating the measuring device into the system

Interface for measured value transmission:
4 to 20 mA



For configuration with the measured value and the current output turndown, select the option in the order structure when ordering. This cannot be changed at a later stage.

7 Commissioning

7.1 Function check

⚠ WARNING

Incorrect connection, incorrect supply voltage

Safety risks for staff and device malfunctions!

- ▶ Check that all connections have been established correctly in accordance with the wiring diagram.
- ▶ Ensure that the supply voltage matches the voltage indicated on the nameplate.

Familiarize yourself with the operation of the device before it is first switched on. In particular, please read the "Basic safety instructions" sections. After power-up, the device performs a self-test and then goes to the measuring mode.

7.1.1 Switching on the device

Once connected to the correct supply voltage, the device starts and is operational. The LED display indicates the status.

7.1.2 LED display

LED messages signal the status of the device and sensor.

LED behavior	Status
Green Flashes quickly	Everything OK Device starting up
Green Flashes twice	Everything OK Read out Memosens sensor information from sensor to transmitter (sensor type, calibration data, etc.)
Green Flashes slowly	Everything OK Sensor and device OK and functioning correctly.
Green Flashes quickly three times	Everything OK Measured value at PLC in automatic HOLD. If the "Sensor replacement alarm delay" is exceeded, the device transmits a signal on alarm. The automatic hold is set to 30 seconds.
Red Flashes quickly	Failure of device or sensor Fault state as per NAMUR NE107



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